

**Amendments to the Claims:**

The following is a complete listing of claims, replacing all prior versions of the claims in this application:

1 Claim 1 (currently amended): A process for the preparation of monodisperse luminescent  
2 semiconductor nanocrystals having detectable properties within a target range, said process  
3 ~~method~~ comprising:  
4 (a) combining nanocrystal-forming reactants comprising (i) a member  
5 selected from the group consisting of cadmium salts, zinc salts, cadmium oxide, zinc  
6 oxide, organocadmium compounds, and organozinc compounds and (ii) a member  
7 selected from the group consisting of an elemental chalcogen and a chalcogen-containing  
8 compound, with a solvent and a reaction promoter to form a solution;  
9 (b) continuously passing said solution at a selected flow rate through a  
10 thermally conductive reaction tube that is maintained at a temperature sufficiently high to  
11 initiate a reaction among said reactants, thereby producing a product mixture containing  
12 nanocrystals;  
13 (c) monitoring said product mixture to detect properties of said  
14 nanocrystals that are indicative of the degree to which said nanocrystals possess desired  
15 characteristics; and  
16 (d) comparing the value of said properties thus detected with said target  
17 range and adjusting either the temperature of said reaction tube, the flow rate of said  
18 solution, or both, if needed to correct any deviation between said value of said detected  
19 properties and said target range.

20 Claim 2 (original): A process in accordance with claim 1 in which said properties thus detected  
21 are optical properties.

1 Claim 3 (original): A process in accordance with claim 1 further comprising cooling said  
2 product mixture between steps (b) and (c) to a temperature sufficiently low to quench said  
3 reaction.

1 Claim 4 (original): A process in accordance with claim 3 in which said cooling is achieved by a  
2 heat transfer medium in contact with said reaction tube.

1 Claim 5 (original): A process in accordance with claim 1 in which step (c) is performed upon  
2 emergence of said product mixture from said reaction tube.

1 Claim 6 (original): A process in accordance with claim 3 in which said cooling is performed by  
2 combining additional solvent with said product mixture, said additional solvent being at a  
3 temperature and a proportion relative to said product mixture sufficient to achieve a final  
4 temperature sufficiently low to quench said reaction.

1 Claim 7 (original): A process in accordance with claim 2 in which said optical features are  
2 photoluminescent emission spectra, and step (c) comprises irradiating said product mixture with  
3 light and detecting wavelength spectra of photoluminescent energy emitted from said  
4 nanocrystals.

1 Claim 8 (original): A process in accordance with claim 2 in which said optical features are  
2 absorbance, and step (c) comprises irradiating said product mixture with light and detecting  
3 absorbance spectra of said nanocrystals.

1 Claim 9 (original): A process in accordance with claim 2 in which said optical features are light  
2 scattering, and step (c) comprises irradiating said product mixture with light and detecting the  
3 presence of light scattering by said nanocrystals.

1 Claim 10 (canceled)

1 Claim 11 (original): A process in accordance with claim 1 in which said thermally conductive  
2 reaction tube is a coiled tube cast in a solid block of heat conductive metal.

1 Claim 12 (original): A process in accordance with claim 1 in which temperature maintenance of  
2 said reaction tube is achieved by a heat transfer medium maintained at a temperature of at least  
3 about 100°C.

1 Claim 13 (original): A process in accordance with claim 12 in which said heat transfer medium  
2 is maintained at a temperature of from about 100°C to about 400°C.

1 Claim 14 (canceled)

1 Claim 15 (currently amended): A process in accordance with claim 1 ~~claim 14~~ in which said  
2 reactant (i) is a member selected from the group consisting of dimethyl cadmium and cadmium  
3 acetate.

1 Claim 16 (currently amended): A process in accordance with claim 1 ~~claim 14~~ in which said  
2 chalcogen is a member selected from the group consisting of sulfur, selenium, and tellurium.

1 Claim 17 (currently amended): A process in accordance with claim 1 ~~claim 14~~ in which said  
2 chalcogen is selenium.

1 Claim 18 (original): A process in accordance with claim 1 in which said nanocrystal comprises a  
2 member selected from the group consisting of ZnS, ZnSe, ZnTe, CdS, CdSe, and CdTe.

1 Claim 19 (original): A process in accordance with claim 1 in which said solvent is a member  
2 selected from the group consisting of alkyl phosphines, alkyl phosphine oxides, pyridines,  
3 furans, ethers, amines, and alcohols.

1 Claim 20 (original): A process in accordance with claim 1 in which said solvent is a member  
2 selected from the group consisting of tri n octylphosphine and tri n octylphosphine oxide.

1 Claim 21 (original): A process in accordance with claim 1 in which said solvent is a mixture of  
2 tri n octylphosphine and tri n octylphosphine oxide.

1 Claim 22 (original): A process in accordance with claim 12 in which step (d) comprises  
2 adjusting the temperature of said heat transfer medium.

1 Claim 23 (original): A process in accordance with claim 1 in which step (d) comprises adjusting  
2 the flow rate of said solution.

1 Claim 24 (currently amended): A process for the coating of nanocrystals with a passivating  
2 coating to achieve coated nanocrystals having detectable properties within a target range, said  
3 process method comprising:

4 (a) combining nanocrystal cores with surface passivating reactants capable of  
5 forming a shell wherein the shell comprises a member selected from the group consisting  
6 of CdS, CdSe, ZnS, ZnSe, ZnTe, and alloys and mixtures thereof, and a solvent to form a  
7 dispersion;

8 (b) continuously passing said dispersion through a thermally conductive reaction  
9 tube maintained at a temperature sufficiently high to initiate a reaction among said  
10 passivating reactants, thereby producing a product mixture containing nanocrystals  
11 coated with a passivating coating;

12 (c) monitoring said product mixture to detect properties of said nanocrystals that  
13 are indicative of the degree to which said nanocrystals possess desired characteristics;  
14 and

15 (d) comparing values of said properties thus detected with said target range and  
16 adjusting the temperature of said reaction tube, the flow rate of said solution, or both, if  
17 needed to correct any deviation between said values of said detected properties and said  
18 target range.

1 Claims 25-49 (canceled)

1 Claim 50 (new): A process in accordance with claim 1 further comprising heating said  
2 nanocrystal-forming reactants prior to step (a).

1 Claim 51 (new): A process in accordance with claim 1 wherein said solvent is a coordinating  
2 solvent.

1 Claim 52 (new): A process in accordance with claim 1 wherein step (a) comprises combining  
2 said nanocrystal-forming reactants with a coordinating additive in addition to said solvent and  
3 said reaction promoter.

- 1 Claim 53 (new): A process in accordance with claim 1 wherein said reaction promoter is a
- 2 member selected from the group consisting of oxygen and a reducing agent.